AT-VLT
Vision Logger
Temperature Recorder

User's Guide

Installation Instructions and Precautions

1. The appliances in the package are designed for wall mounting or table-top installation.
2. When mounting the product on a wall, be sure to use the correct type of screw. Secure all screws to prevent the product from falling from its mounting.
3. Make all the connections to the product first, and only afterwards mount the transformer on the wall.

Safety Precautions

1. Install the product in a dry environment. Prevent humid conditions and water leakage.
2. Protect the project and power supply from extreme temperatures. Do not install the product near radiators or in direct sunlight.
3. Prevent any foreign objects from falling on the product. Prevent spillage of any liquids, such as strong acids.
4. Connect the power supply to the appropriate voltage, as marked on the unit.
5. In order to prevent damage to cables and connectors, do not disconnect cables by pulling on them.
6. Route all cables where they will not cause hazard and ensure that the cables are not harmed in any way.

Warnings

1. Do not replace cables or connectors with non-original parts.
2. Fault connections may cause electrocution.
3. The power supply is designed for indoor use only.

TABLE OF CONTENTS

Chapter 1 Introduction 1

Features 1

Description 2

Chapter 2 Installation 4

Package Contents 4

Installation Options 5

Bracket Mounting 5

Connections 6

Mandatory Connections and Startup 6

Optional Connections 7

Viewing Information on an External PC 7

Power 8

Power Source 8

Battery Installation and Replacement 9

Chapter 3 Operation 10

Displaying Temperatures 10

Printing 11

Advancing and Changing Printer Paper 11

Alarms 12

Chapter 4 Configuration 14

Online Help 15

Configuring Alarm Settings 15

Configuring the Alarm Range 16

Configuring the Alarm Delay 16

Configuring the Alarm Output *16*
Configuring the End of Paper Alarm *17*
Configuring Print Settings 18
Configuring Temperature and Date Formats 19
Changing the Time and Date 20
Changing the Password 20
Changing the Device ID 21
Changing the Temperature Calibration 22
Erasing the Log 22
Changing the Sampling Rate 22

Chapter 5 Troubleshooting 23

Appendix A Factory Default Settings 24

Appendix B Specifications 26

Appendix C Components 27

Appendix D Menu Structure 28

CHAPTER 1 INTRODUCTION

The Vision Logger Temperature Recorder (AT-AT-VLT) records, saves, and prints up to 290 temperature readings at predefined intervals. The AT-VLT produces an alarm whenever the temperature goes above or below a defined range. The alarm can be produced immediately when the temperature goes out of the defined range, or after the temperature remains out of range for a certain period of time. The AT-VLT provides several printing options, including the ability to send data to an external PC. The AT-VLT can also send alarms to an external device via a relay contact.

The AT-VLT can monitor, log, and print temperatures of -40°C to +130°C (-40°F to +266°F), +\- 1°.

FEATURES

Table 1 describes the AT-VLT features, with references to the section and page in this manual describing how to use or configure the feature.

Table 1: Vision Logger Temperature Recorder Features

FEATURE	FOR FURTHER INFORMATION SEE
Records temperatures at intervals of between one and 90 minutes	*Changing the Sampling Rate* on page 22
Produces an alarm if the temperature goes above or below a predefined range	*Configuring the Alarm Range* on page 16
Records and displays temperatures in either Celsius or Fahrenheit, and date in European or English (American) format	*Configuring Temperature and Date Formats* on page 19
Records and prints 290 readings on request at any time	*Printing* on page 11
Three printing formats, including graphic or text, and ID number, time, temperature, and alarm status	*Configuring Print Settings* on page 18
Audio and visual alarms, including an option for sending alarms to an external device	*Alarms* on page 12 and *Optional Connections* on page 7
Option to export data to external PC	*Viewing Information on an External PC* on page 7
Optional backup battery for up to 60 hours	*Battery Installation and Replacement* on page 9

DESCRIPTION

Figure 1 shows the front and top of the AT-VLT.

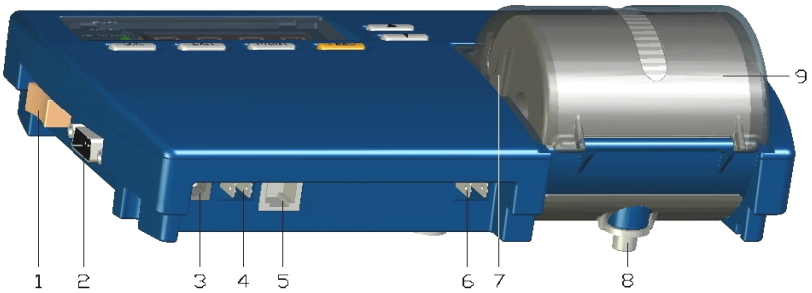

Figure 1: Vision Logger Temperature Recorder - Front/Top View

1. Power switch
2. RS-232 port
3. 12V power jack
4. Buzzer silent contacts
5. Temperature sensor input jack
6. Remote alarm contacts
7. Paper cover clip
8. Secure to the bracket
9. Paper cover

Figure 2 shows the rear and bottom of the AT-VLT.

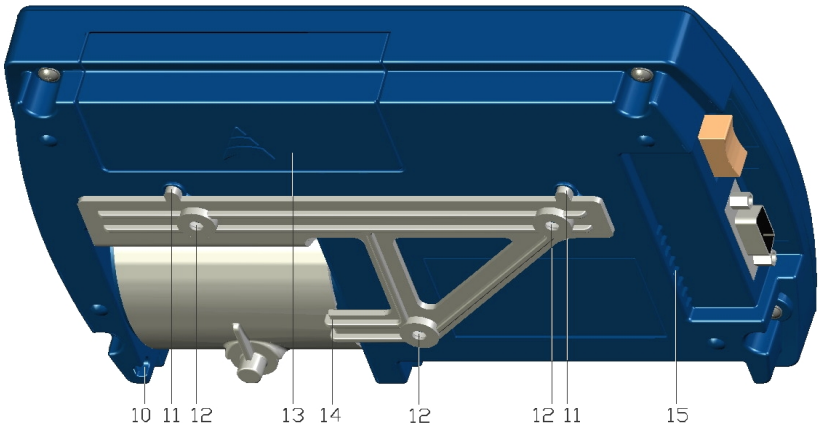

Figure 2: Vision Logger Temperature Recorder - Rear View

10. Secure tie hole
11. Hanging hole
12. Bracket hanging hole
13. Batteries cover
14. Bracket mounting
15. Buzzer alarm grill

Figure 3 shows the display area of the AT-VLT.

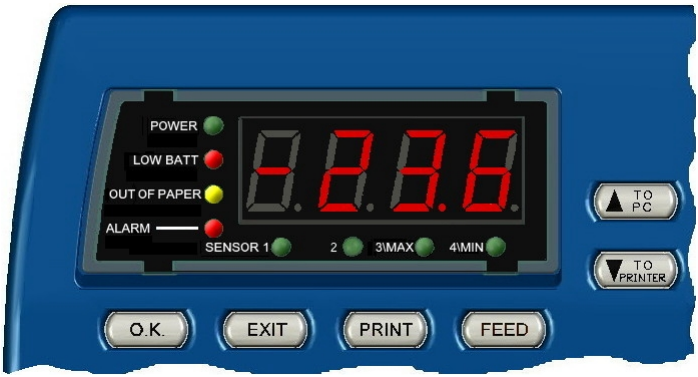

Figure 3: Vision Logger Temperature Recorder - Display Area

CHAPTER 2 INSTALLATION

This chapter explains how to install the AT-VLT, and includes the following topics:

- **Package Contents** – Lists the contents of the AT-VLT package.
- **Installation Options** – Describes the possible ways to install the AT-VLT, and describes how to attach the AT-VLT to a wall bracket.
- **Connections** – Describes the mandatory and optional cable connections, including instructions on how to start the AT-VLT.
- **Power** – Describes the AT-VLT's power requirements and backup battery operation capability, and explains how to install or replace batteries.

PACKAGE CONTENTS

The AT-VLT package should include the following components:

Table 2: Package Contents

DESCRIPTION	QUANTITY	PART NUMBER
AT-VLT unit with one temperature channel	1	AT-VLT (115V), AT-VLT220 (220V Europe) AT-VLT12 (to vehicle)
Waterproof, remote 33 feet temperature sensor cord (10 meters)	1	AT-VLTSENSOR
Thermal paper roll, 2 inches wide, 131 feet long (40 meters)	2 (1 installed)	VLPAPER
12V AC/DC power adaptor - US (120V) OR 12V AC/DC power adaptor - EU (230V) # AT-VLT12 has DC cord instead of power adaptor	1	VL115 VL220 (Europe) CRCPW
3.6V Lithium battery (CR2032)	1 (installed)	VLBAT
Hanging bracket	1	VLBRKT
User's Guide	1	VLMANUAL
Bracket mounting screws	3	
Bracket securing screw	1	

INSTALLATION OPTIONS

You can use the AT-VLT as a standalone unit or attach it to a wall. There are two ways to attach the AT-VLT to a wall:

- **Direct Mounting** – Attach the AT-VLT directly to the wall.
- **Bracket Mounting** – Attach the AT-VLT bracket to the wall, and hang the AT-VLT on the bracket, as described below.

Bracket Mounting

To attach the AT-VLT to the wall using the bracket:

1. Mount the AT-VLT bracket to the wall with three screws, as shown in Figure 4.

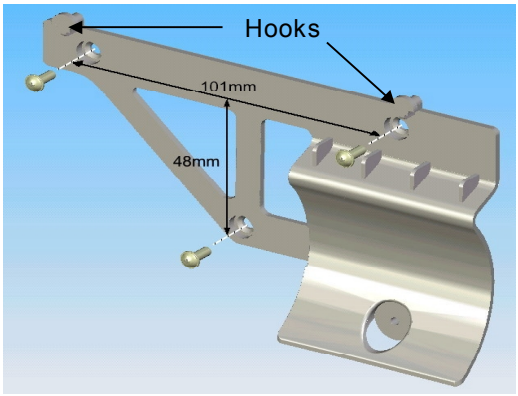

Figure 4: Bracket Mounting

Note: Make sure to leave enough space on the left to operate the main switch and connect all the other cables mentioned in *Connections* on page 6.

2. Hang the AT-VLT on the two mounted bracket hooks, as shown in Figure 4.
3. Open the paper cover by pushing the two cover clips (item 7 in Figure 1) to the inside and pulling the cover out.
4. Fasten one screw through the hole under the paper roll to secure the AT-VLT to the bracket, as shown in Figure 5.
5. Return the paper cover to its place.

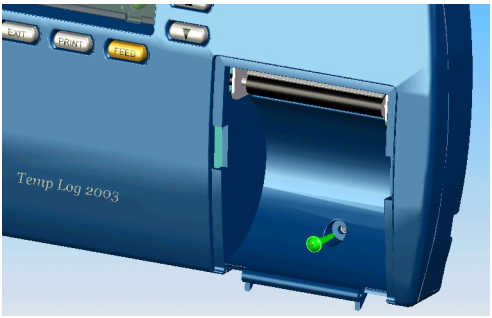

Figure 5: Securing the Unit to the Bracket

CONNECTIONS

This section describes the cables you must connect in order to use the AT-VLT, as well as cables you can attach in order to use optional features.

Mandatory Connections and Startup

To connect and start up the AT-VLT:

1. Plug the AC adaptor into the power supply and connect the 12V power cord to the power jack (item 3 in Figure 6).
2. Connect the temperature sensor cord to the temperature sensor input jack (item 5 in Figure 6).
3. Switch the power switch to the On position (item 1 in Figure 6). The Power and Sensor LEDs turn green. After a few moments, the temperature should appear in the display area.

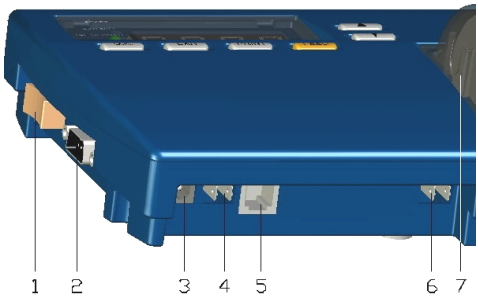

Figure 6: Connections

Optional Connections

You can connect the following optional cables:

- To send alarms to a remote device, attach a cable to the remote alarm contacts (item 6 in Figure 6). The remote alarm contacts are a pair of ¼" terminals, 1 Amps, 12V.
- To export temperature data to a PC, attach an RS-232 cable from the PC to the RS-232 port (item 2 in Figure 6).
- To silence the alarm, connect a remote buzzer silencing device by attaching a cable with a momentary switch to momentarily short the buzzer silencer contacts (item 4 in Figure 6). The buzzer silencer contacts are a pair of ¼" terminals.

Viewing Information on an External PC

Before you can view information from the AT-VLT on an external PC, you must establish a new Hyper Terminal connection on the PC.

Note: If you have already established a Hyper Terminal connection on your PC, skip to *Viewing Information on an External PC* on page 8.

Establishing a New Hyper Terminal Connection

To establish a new Hyper Terminal connection on your PC:

1. Connect an RS-232 cable from the PC to the RS-232 port (item 2 in Figure 6).
2. On the PC, open Hyper Terminal. To open Hyper Terminal, select **Start**>**Programs**>**Accessories**>**Communications**>**HyperTerminal** and double-click **HYPERTRM.EXE**.

Note: If Hyper Terminal is not installed on your computer, you can install it from the Control Panel. Double-click **Add/Remove Programs**, click the **Windows Setup** tab, select **Communications**, click **Details**, select **Hyper Terminal**, click **OK**, then click **OK** again.

3. Enter a name for the AT-VLT connection.
4. Select an icon and click **OK**.
5. In the **Connect to** window, go to the lower **Connect using:** menu and select **Direct to Com1** (making sure to choose a free Com port).

6. Click **OK**. If the Com port is not free, choose another port by selecting **File**> **Properties**> and selecting the corresponding COM port, and then click **OK**.

Note: Configure the COM properties as follow: **Bits per second** - 9600; **Data bits** - 8; **Parity** - None; **Stop bits** - 1; **Flow control** - None,

Viewing Information on an External PC

To view information from the AT-VLT on an external PC:

1. Connect an RS-232 cable from the PC to the RS-232 port (item 2 in Figure 6).
2. On the PC, open the AT-VLT Hyper Terminal connection program. To open it, select **Start> Programs> Accessories> Communications> HyperTerminal** and double-click the AT-VLT Hyper Terminal icon that you previously created (refer to *Establishing a New Hyper Terminal Connection* on page 7).

The AT-VLT Hyper Terminal window on the PC displays message lines according to the sampling rate. The Hyper Terminal displays whatever information the AT-VLT prints, both manually and automatically. For information on printing manually, refer to *Printing* on page 11. For information on printing automatically, refer to *Configuring Print Settings* on page 18.

Notes: To capture lines one after the other, select **File**> **Properties** and select the **Setting** tab. Under **ASCII Setup**, select **Append line feed to incoming line ends**.

To capture the data to a file, select **Transfer**> **Capture Text**. Enter the file name and click **Start**.

When the print format is configured as graph, only the current temperature and the alarm range appear in Hyper Terminal. On every 12th row, the data is displayed in full text format.

POWER

This section explains the AT-VLT's power requirements and backup battery operation capability, and explains how to install or replace batteries.

Power Source

The AT-VLT uses a 12V AC/DC power supply. When the AT-VLT is using the main power supply, the Power LED is lit green.

In the event of a power failure, or if the working environment temperature goes over 150°F (65°C), the AT-VLT automatically switches over to a 9V backup battery (if installed). When operating in backup mode, the AT-VLT logs temperature measurements to memory, but does not print. The Power LED blinks, and the display area shows the current temperature every 30 sec. for two seconds. You can also display the current temperature for two seconds at a time manually by pressing OK. With a new 9V battery, the AT-VLT can operate in backup mode for 60 hours.

When the main power returns, the Power LED goes on without blinking, and the printer prints the temperature measurements that were recorded but not printed when the AT-VLT was operating in backup mode.

Battery Installation and Replacement

The AT-VLT uses two batteries:

- **Lithium battery (CR2032)** – Used for saving logging data and configuration settings, and for running the real-time clock. After replacing the Lithium battery, you should check and reset the AT-VLT configuration settings.
- **9V alkaline backup battery** – Used for backup operation (refer to *Power Source* on page 8). This battery is optional, and is not included with the AT-VLT package. When the Low Batt LED blinks, you should replace the 9V backup battery.

To change or install batteries:

1. Push and slide the cover of the battery compartment out, as shown in Figure 7.
2. Install the batteries as indicated, according to the polarity marks in the battery compartment.
3. Position the cover over the battery compartment and snap it back into place.

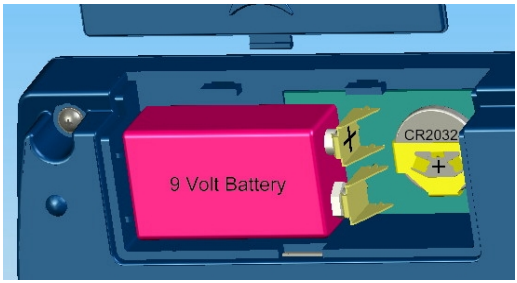

Figure 7: Battery Installation and Replacement

CHAPTER 3 OPERATION

This chapter explains how to operate the AT-VLT, and includes the following topics:

- **Displaying Temperatures**
- **Printing**
- **Advancing and Changing Printer Paper**
- **Alarms**

DISPLAYING TEMPERATURES

When the AT-VLT is on, it displays the current temperature. You can also display the maximum and minimum measured temperatures in the AT-VLT's memory by pressing ▲ and ▼. The AT-VLT's memory can store up to 290 readings. The time period this covers depends on the sampling rate. For example, if the sampling rate is 15 minutes, the AT-VLT's internal memory contains the temperature data from the last three days.

- Press ▲ to display the lowest temperature in memory. Press ▲ again to display the highest temperature in memory, **AdJ** (for adjusting parameters), and to return to the current temperature. After three seconds, the display automatically returns to the current temperature.
- Press ▼ to display **AdJ** (for adjusting parameters). Press ▲ again to display the highest temperature in memory, the lowest temperature in memory, and to return to the current temperature. After three seconds, the display automatically returns to the current temperature.

Note: You can configure the AT-VLT to display temperatures in either Celsius or Fahrenheit. Refer to *Configuring Temperature and Date Formats* on page 19.

PRINTING

The AT-VLT can be configured to print temperatures automatically at defined intervals. For a description of the available print modes and instructions on configuring the print settings, refer to *Configuring Print Settings* on page 18.

In addition, you can manually print the memory report (a list of all saved measurements) on demand, or send the report to a PC to view and save the information. To send the memory report to the printer or a PC, press PRINT. **SEnd** appears in the display area.

- To print the memory report, press ▼.
- To send the memory report to a PC, press ▲.
- If you do not press either button within three seconds, the display automatically returns to the current temperature.

The AT-VLT prints or sends the memory report in whichever print mode is currently configured. If the AT-VLT is also configured to print or send measurements automatically, then when the printing is finished, the AT-VLT prints or sends all measurements that were recorded during the on demand memory report printing or sending operation.

Every report that is printed or sent on demand begins with the message ***MEMORY REPORT*** and ends with the message ***END OF REPORT***. The printed or sent on demand report displays the measurements in reverse order (i.e., current measurements are displayed before the earlier measurements).

To manually stop printing or sending a report on demand, press EXIT. The printout or sent report displays the message ***MEMORY REPORT STOPPED BY USER***.

Note: When you send a report to a PC, all data is sent within ten seconds.

ADVANCING AND CHANGING PRINTER PAPER

The AT-VLT uses thermal printing paper to print temperature readings. This type of paper uses heat, rather than ink, to print. The AT-VLT's printer does not print on ordinary paper. When ordering replacement paper rolls, make sure to order thermal paper.

When a red mark appears on the side of the paper, this indicates that the paper roll is almost finished. You should replace the paper roll before it reaches the end, so that the printer paper will not stop or get stuck.

To replace the paper roll:

1. Press FEED two or three times to advance the paper.

Note: The FEED button does not work unless the printer is set for automatic printing. Refer to *Configuring Print Settings* on page 18.

2. Tear out the latest printed report.
3. Open the paper cover and remove the leftover paper roll. The alarm buzzer will sound, and the Out of Paper LED will blink.
4. Straighten the edge of the new paper roll with a scissors.
5. Place the new paper roll in the paper compartment, or inside the open paper cover, and push the edge of the paper straight through the printer under the printer's black rubber roller.
6. Press FEED to advance the paper through the printer. After installing the new roll, the alarm buzzer and the Out of Paper LED should go off.

ALARMS

The AT-VLT has the following alarm indicators:

- **Buzzer** – Some alarms trigger an internal buzzer. You can silence the buzzer by pressing EXIT or on the optional remote buzzer-silencer switch. Refer to *Optional Connections* on page 7.You can also configure the AT-VLT so that the buzzer does not go on. Refer to *Configuring the Alarm Output* on page 16.

Note: The buzzer silencer only shuts off the internal buzzer sounds. The alarm LEDs and the external device connected to the relay contact (if enabled) remain operational.

- **LEDs** – The four LEDs to the left of the display area indicate various alarms, as described below. The top LED indicates that the AT-VLT's power is on.

- **Relay Contact to External Device** – You can connect the external device to the AT-VLT remote alarm contacts (item 6 in Figure 6 on page 6) and configure the AT-VLT to send alarms to the external device via a normally open relay contact. Refer to *Configuring the Alarm Output* on page 16.

The following events trigger an alarm:

- **Disconnected Temperature Sensor** – If the temperature sensor is disconnected from the AT-VLT, the display area shows the message **nOS**, the Alarm LED lights, and the internal buzzer sounds (if enabled).

- **Alarm Range** – If the measured temperature goes outside the maximum or minimum defined temperature range for a consecutive period of time equal to the defined alarm delay period (if any), an alarm is sent. The internal buzzer sounds (if enabled), and an alarm is sent to an external device via the relay contact (if enabled). In addition, the Alarm LED lights. For instructions on configuring the buzzer and relay contact to respond to Alarm Range alarms, refer to *Configuring the Alarm Output* on page 16.

- **End of Paper** – If the printer paper runs out, the internal buzzer sounds (if enabled), and an alarm is sent to an external device via the relay contact (if enabled). In addition, the Out of Paper LED lights. For instructions on configuring the buzzer and relay contact to respond to Out of Paper alarms, refer to *Configuring the End of Paper Alarm* on page 17.

Figure 8 provides a close-up of the rear panel, including the remote alarm contacts on the right side and the remote buzzer silencing device contacts on the left side.

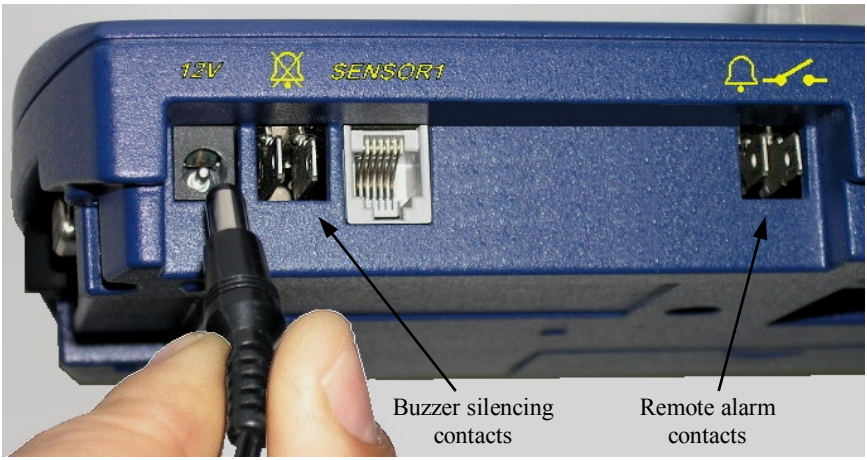

Figure 8: Rear Panel Close-Up

CHAPTER 4 CONFIGURATION

This chapter explains how to configure the AT-VLT. To configure AT-VLT parameters, you must enter a password. The default password is ▲ ▼ OK EXIT. For instructions on changing your password, refer to *Changing the Password* on page 20.

To change the AT-VLT configuration:

1. Press ▲ or ▼ until **AdJ** appears in the display area.
2. Press OK. **PASS** appears in the display area.
3. Enter your password. **ALr** appears in the display area. **ALr** allows you to change the alarm settings.
4. The AT-VLT has nine root menu items. To scroll through the root menu items, press ▲. To scroll through the root menu items in reverse order, press ▼. The following are the root menu items:
   - **ALr** – Alarm configuration
   - **Prn** – Printing configuration
   - **SCAL** –Temperature units and date format configuration
   - **CLoC** – Date and time configuration
   - **ChPA** – Change password
   - **SIdn** – ID number configuration
   - **CALb** – Temperature calibration
   - **Lo9r** – Erasing the logging measurements from the memory
   - **SAPr** – Sampling rate configuration

Note: For a full diagram of the AT-VLT menu tree, refer to Appendix D, *Menu Structure* on page 28. For a list of the default factory settings, refer to Appendix A, *Factory Default Settings* on page 24.

5. When you reach the root menu item that you want, press OK. The first sub-menu item appears.
6. When you have finished configuring an item, you must press EXIT to save the configuration changes.

ONLINE HELP

The AT-VLT offers online help that explains the short format display massages and guides you through the menu configurations.

1. Open the paper cover to best view the printed online help messages.
2. If you want help on any menu item, press PRINT. The AT-VLT will print and/or send the online help message in whichever format is currently configured (as described in *Configuring Print Settings* on page 18).

Note: The PRINT key can be used to access the online help in all situations, except while the current temperature is being displayed.

3. The AT-VLT prints and/or sends a blank line after every online help message.

Notes: You cannot print online help unless the printer is set for automatic printing. Refer to *Configuring Print Settings* on page 18.

If the AT-VLT is configured to send output to an external PC, help messages will also be sent to the external PC.

CONFIGURING ALARM SETTINGS

To configure alarm settings, display the **ALr** root menu. From the **ALr** root menu, you can configure the following alarm settings:

- **Alarm Range Set (ALS)** – Allows you to define a temperature range. When the current temperature is outside of this range, the AT-VLT sends an alarm.
- **Alarm Delay (ALdl)** – Allows you to define an alarm delay. If the current temperature goes out of the defined temperature range, the AT-VLT does not send an alarm until the temperature remains outside of the range for the length of time defined by the Alarm Delay parameter.
- **Alarm Output (ALO)** – Allows you to define whether or not the AT-VLT's internal alarm sounds when an alarm is sent, and whether or not alarms are sent to an external device.
- **End of Paper Alarm (EOFP)** – Allows you to define whether or not the AT-VLT's internal alarm sounds, and whether or not alarms are sent to an external device, when the paper runs out.

Configuring the Alarm Range

To configure the high and low temperatures that will trigger an alarm:

1. From the **ALr** menu, press OK. **ALS** appears.
2. Press OK. **LoA1** appears. Press ▲ or ▼ to set the minimum temperature. Temperatures below this temperature will trigger an alarm.
3. Press OK. **HIA1** appears. Press ▲ or ▼ to set the maximum temperature. Temperatures above this temperature will trigger an alarm.
4. Press EXIT. The changes are saved and **ALS** appears.
   - ▽ To change other alarm settings, press ▲ or ▼ to display the other alarm menu items.
   - ▽ To go to another root menu item, press EXIT again, then press ▲ or ▼ to display the other root menu items.
   - ▽ To exit configuration and display the current temperature, press EXIT twice.

Configuring the Alarm Delay

To configure the alarm delay:

1. From the **ALr** menu, press OK. **ALS** appears.
2. Press ▲. **ALdl** appears.
3. Press OK. The current alarm delay setting appears.
4. Press ▲ or ▼ to scroll among the possible alarm delay values: n0 (no delay), 10 (minutes), 30 (minutes), 1 h (1 hour), and 2 h (2 hours). When the value you want to select appears, press OK. **ALdl** appears.
5. Press EXIT. The changes are saved and **ALr** appears.
6. Press EXIT again to exit configuration and display the current temperature.

Configuring the Alarm Output

To configure the alarm output:

1. From the **ALr** menu, press OK. **ALS** appears.
2. Press ▲ or ▼ twice. **ALO** appears.

3. Press OK. The current alarm buzzer setting appears:
   - **buOn** – The internal buzzer will sound when there is an alarm.
   - **buOF** – The internal buzzer will not sound when there is an alarm.
4. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. The current external Normally Open contact device setting appears:
   - **CoOn** – The external Normally Open contact is closed and a signal is sent to the external device when there is an alarm.
   - **CoOF** – A signal is not sent to the external device when there is an alarm.
5. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. **ALO** appears.
6. Press EXIT. The changes are saved and **ALr** appears.
7. Press EXIT again to exit configuration and display the current temperature.

Configuring the End of Paper Alarm

To configure the End of Paper alarm output:

1. From the **ALr** menu, press OK. **ALS** appears.
2. Press ▼. **EOFP** appears.
3. Press OK. The current End of Paper alarm buzzer setting appears:
   - **buOn** – The internal alarm sounds when the printer is out of paper.
   - **buOF** – The internal alarm does not sound when the printer is out of paper.
4. To keep the current setting, press OK. To change the setting, press the ▲ or ▼ button to toggle the setting, then press OK. The current End of Paper external device setting appears:
   - **CoOn** – An alarm is sent to the external device when the printer is out of paper.
   - **CoOF** – An alarm is not sent to the external device when the printer is out of paper.
5. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. **EOFP** appears.
6. Press EXIT. The changes are saved and **ALr** appears.
7. Press EXIT again to exit configuration and display the current temperature.

CONFIGURING PRINT SETTINGS

To configure print settings, display the **Prn** root menu. From the **Prn** root menu, you can configure the following print settings:

- **Print Format** – Allows you to choose from among three print formats. Both the AT-VLT printer output and the external PC output will use the selected format.
- **Printer** – Allows you to define whether or not the AT-VLT automatically prints temperature readings. When the printer is set to print automatically, the AT-VLT prints each temperature reading that it measures, at the defined measurement intervals. Refer to *Changing the Sampling Rate* on page 22.
- **PC Output** – Allows you to define whether or not the AT-VLT sends temperature readings to an external PC.

To configure print settings:

1. From the **Prn** menu, press OK. The current print format appears:
   - **LChr** – The AT-VLT prints and sends output to an external PC using a large character format. Each temperature record includes the following information: Date, time, and temperature. The following is an example of a temperature record in large character format:

     ```
     29 15:32  78.0F AL
     ```

     In this example, the date is the 29th of the current month, the time is 15:32 (3:32 p.m.), the temperature is 78.0°F, and the alarm is activated.
   - **SChr** – The AT-VLT prints and sends output to an external PC using a small character format. Each temperature record includes the following information: ID of the unit recording the measurement, time, date, and temperature. The following is an example of a temperature record in small character format:

     ```
     SUPCO 12345 04/29/04 15:32 78.0F A
     ```

     In this example, the ID of the AT-VLT unit is SUPCO 12345 (refer to *Changing the Device ID* on page 21), the date is April 29, 2004 (refer to *Changing the Time and Date* on page 20), the time is 15:32 (3:32 p.m.), and the temperature is 78.0°F, and the alarm is activated.
   - **9rAP** – The AT-VLT prints in a graph format. The graph format prints temperature measurements in the form of a curved graph. Every temperature value is printed next to the relevant graph point. The minimum and maximum temperature thresholds are shown as separate striped lines, and the temperature range values are printed in text every 12th row. If temperature range alarms are enabled, the letter A appears

next to any line in which the temperature is outside of the defined temperature range and the delay time has elapsed. In every 12th row, full information is printed in small character format.

Note: When information is printed to an external PC in graph format, the current temperature and the alarm range are printed, but the graph itself is not printed.

2. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. The current printer setting appears:
   - **PrOn** – The AT-VLT printer prints temperature records automatically at the defined measurement intervals.
   - **PrOF** – The AT-VLT printer does not print temperature records unless you request a printout manually. Refer to *Printing* on page 11.
3. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. The current PC output setting appears:
   - **PCOn** – The AT-VLT sends temperature records to an external PC automatically at the defined measurement intervals.
   - **PCOF** – The AT-VLT printer does not send temperature records unless you request it to send output manually. Refer to *Printing* on page 11.
4. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. **Prn** appears.
5. Press EXIT to save your changes, exit configuration, and display the current temperature.

Configuring Temperature and Date Formats

To configure the format in which the AT-VLT displays temperatures (Celsius or Fahrenheit) and dates (European or American):

1. Display the **SCAL** root menu.
2. From the **SCAL** menu, press OK. The current temperature format appears:
   - **F d9** – Fahrenheit
   - **C d9** – Celsius
3. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. The current date format appears:
   - **EndA** – English (American) date format (mm/dd/yy)
   - **EudA** – European date format (dd/mm/yy)

4. To keep the current setting, press OK. To change the setting, press ▲ or ▼ to toggle the setting, then press OK. **SCAL** appears.
5. Press EXIT to save your changes, exit configuration, and display the current temperature.

CHANGING THE TIME AND DATE

To change the time and date:

1. Display the **CLoC** root menu.
2. From the **CLoC** menu, press OK. **SdAY** appears.

Note: To keep the current date and change the time, press ▲ or ▼ to toggle the setting to **Shr**, then follow the instructions starting at number 4.

3. To change the date, press OK. The current month appears in numerical format (01 = January, 02 = February, etc.). Press ▲ or ▼ to change the setting, then press OK. The current day of the month appears. Press ▲ or ▼ to change the setting, then press OK. The last two numbers of the year appears. Press ▲ or ▼ to change the setting, then press OK. **Shr** appears.
4. To change the time, press OK when **Shr** is displayed. The current hour appears. Press ▲ or ▼ to change the setting, then press OK. The current time in minutes appears. Press ▲ or ▼ to change the setting, then press OK. **CLoC** appears.
5. Press EXIT to save your changes, exit configuration, and display the current temperature.

CHANGING THE PASSWORD

To change the AT-VLT password:

1. Display the **ChPA** root menu.
2. From the **ChPA** menu, press OK. **PASS** appears.
3. Enter a sequence of four keys. **PASS** appears again.
4. Enter the same sequence of four keys to confirm the password. If the second sequence is the same as the first sequence, **ChPA** appears. If it is not, **PASS** appears again, and you must repeat steps three and four.
5. Press EXIT to save the new password, exit configuration, and display the current temperature.

CHANGING THE DEVICE ID

The AT-VLT has a device ID that appears in temperature reports. The purpose of the device ID is to identify the device producing printouts and reports when printouts and reports are being collected from more than one device.

The device ID consists of 11 alphanumeric characters. You can change each character individually by entering a numerical code of one or two numbers. Table 3 shows the code for setting the device ID.

Table 3: Numerical Code for Setting Device ID

CHR.	CODE	CHR.	CODE	CHR.	CODE	CHR.	CODE	CHR.	CODE
0	*0*	**8**	*8*	**F**	*16*	**N**	*24*	**V**	*32*
1	*1*	**9**	*9*	**G**	*17*	**O**	*25*	**W**	*33*
2	*2*		*10*	**H**	*18*	**P**	*26*	**X**	*34*
3	*3*	**A**	*11*	**I**	*19*	**Q**	*27*	**Y**	*35*
4	*4*	**B**	*12*	**J**	*20*	**R**	*28*	**Z**	*36*
5	*5*	**C**	*13*	**K**	*21*	**S**	*29*	**-**	*37*
6	*6*	**D**	*14*	**L**	*22*	**T**	*30*		
7	*7*	**E**	*15*	**M**	*23*	**U**	*31*		

To change the device ID:

1. Display the **SIdn** root menu.
2. Press OK. The number 1 appears, followed by a space and a code for the first ID character that will appear in the device. Press ▲ or ▼ to change the character, according to the code in Table 3.
3. Press OK to move on to the next character. Repeat this procedure for each character.
4. When you are finished, press EXIT to save your changes. **SIdn** appears.
5. Press EXIT again to exit configuration and display the current temperature.

CHANGING THE TEMPERATURE CALIBRATION

To change the temperature calibration:

1. Display the **CALb** root menu.
2. Press OK. The number 0.0 appears.
3. Press ▲ or ▼ to raise or lower the temperature measurement, in steps of 0.1°. You can raise or lower the measurement by -2° to 2° in one action.
4. When you are finished, press OK. **CALb** appears.
5. Press EXIT to save your changes, exit configuration, and display the current temperature.

ERASING THE LOG

The AT-VLT saves the last temperature measurements (up to 290 logs). To erase the log:

1. Display the **Lo9r** root menu.
2. Press OK. The log is erased, and **ALr** appears.
3. The AT-VLT will print and or send the message ***MEMORY RESET BY USER,*** <***date***>, < ***time***> in the currently configured print format.
4. Press EXIT to exit configuration and display the current temperature.

CHANGING THE SAMPLING RATE

The AT-VLT measures temperatures at defined intervals. To change the intervals at which temperatures are measured:

1. Display the **SAPr** root menu.
2. Press OK. The current sampling rate appears. The sampling rate can be any value between 1 and 90 minutes.
3. Press ▲ or ▼ to change the sampling rate. When you are finished, press OK. **SAPr** appears.
4. Press EXIT to save your changes, exit configuration, and display the current temperature.

CHAPTER 5 TROUBLESHOOTING

Table 4 lists common problems and suggested solutions.

Table 4: Troubleshooting

PROBLEM	SUGGESTED SOLUTIONS
No power	Wait five seconds after switching on the power switch.
Poor or no printing	• Make sure you are using thermal printing paper. The AT-VLT will not print on non-thermal paper. • Replace the printing side of the thermal paper, or replace the thermal paper itself. • Move the AT-VLT to a location with a temperature between 0 to 149°F (-18 to 65°C).
Wrong time or date	• Change the time or date. Refer to *Changing the Time and Date* on page 23. • Make sure you are using the correct date format (dd/mm/yy or mm/dd/yy). Refer to *Configuring Temperature and Date Formats* on page 19. • Replace the Lithium battery (CR2032). Refer to *Battery Installation and Replacement* on page 9.
Cannot print online help	Change the print mode to PrOn. Refer to *Printing* on page 11.

APPENDIX A FACTORY DEFAULT SETTINGS

To restore the Vision Recorder to its factory default settings:

1. Switch the power switch off.
2. Switch the power switch back on while pressing FEED.
3. When **FAdF** appears in the display area, press OK.

Note: Restoring factory settings does not delete the temperature logs.

Table 5 lists the factory default settings.

Table 5: Factory Default Settings

MENU ITEM	PARAMETER	DEFAULTS	LEGAL VALUES
		PASSWORD SETTINGS	
PASS	Password	▲ ▼ OK EXIT	
		ALARM SETTINGS (AL.)	
ALS	Alarm Range Settings	Min: -4°F (-20°C) Max: 86°F (30°C)	-67°F to 302°F (-55°C to 150°C)
ALdl	Alarm Delay	No	No, 15, 30 min, 1, 2 hr
ALO	Alarm Output	BuOn (buzzer On) CoOn (contact On)	buOn/buOF CoOn/CoOF
EOP	End of Paper	BuOn (buzzer On) CoOn (contact On)	buOn/buOF CoOn/CoOF
		PRINT SETTINGS (PRN)	
	Print Format	SChr (small character)	LChr (large), SChr (small), 9rAP (graph)
	Printer On/Off	PrOn (Printer On)	PrOn, PrOF
	PC Output On/Off	PCOn (PC Output On)	PCOn, PCOF

MENU ITEM	PARAMETER	DEFAULTS		LEGAL VALUES
		TEMPERATURE AND DATE FORMATS (SCAL)		
		# AT-VLT	**# AT-VLT220**	
	Temperature Format	F d9 (Fahrenheit)	C d9 (Celsius)	C d9 (Celsius), F d9 (Fahrenheit)
	Date Format	EndA, English, (mm/dd/yy)	EudA, Europe, (dd/mm/yy)	EudA (dd/mm/yy), EndA (mm/dd/yy)
		CURRENT DATE AND TIME (CLOC)		
		# AT-VLT	**# AT-VLT220**	
SdAY	Date	12/31/04	31/12/04	
Shr	Time	12:00	12:00	
		DEVICE ID NUMBER (SIDN)		
SIdn	Device ID Number	SUPCO 12345		
		TEMPERATURE CALIBRATION (CALB)		
CALb	Temperature Calibration	0°		–2° to 2°
		SAMPLING RATE (SAPR)		
SAPr	Sampling Rate	10 min		1 to 90 minutes

APPENDIX B SPECIFICATIONS

Table 6 lists the AT-VLT's specifications.

Table 6: Specifications

DESCRIPTION	SPECIFICATION
Temperature Measurement Range	-40°F to +266°F (-40°C to +130°C)
Temperature Measurement Accuracy	+/- 1.8°F (+/- 1°C)
Ambient Operating Temperature Range	0°F to +150°F (-18°C to +65°C) non-condensing
Ambient Operating Relative Humidity	0 to 95% non-condensing
Temperature Writing and Storage Resolution	0.2°F (0.1°C)
Storage Temperature Range	-40°F to +150°F (-40°C to +65°C)
Temperature Sensor Cord Length (extensible)	33 feet (10 m)
Temperature Sensor Diameter	0.25 inches (6.35 mm)
Alarm Contact Rating	1 Amps, 12V AC/DC
Thermal Chart Paper Width	2 inches (50.8 cm)
Thermal Chart Paper Length	131 feet (40 m)
Display	Numeric LED Display, 4 characters
Primary Power Supply	VL115: 115 V AC, 50/60 Hz VL220: 220~240V AC, 50/60 Hz
Alternative Power Supply	12V AC/DC, 1.5 Amps (for vehicle operation with adapter, not supplied)
Battery Backup	9V battery, logs up to 50 hours (not supplied)
Clock Battery	3.6V Lithium battery, two years in average use (supplied)
Size	8.2 x 5.3 x 2.7 inches (208.6 x 135 x 69 mm)

APPENDIX C COMPONENTS

Table 7 lists the AT-VLT's components, including optional components.

Table 7: Components

DESCRIPTION	SUPPLIED	PART NUMBER
AT-VLT with temperature channel	1	
Temperature Sensor, 33 feet (10 m)	1	AT-VLTSENSOR
2" thermal paper roll, 131 feet length (40 m)	2	VLPAPER
12V AC/DC, power adaptor: USA: 130V AC operation Europe: 230V AC operation	1	VL115 VL230
3.6V Lithium battery	1	VLBAT
User's Manual	1	VLMANUAL
Wall mounting bracket	1	VLBRKT
Paper compartment cover	Optional	VLPACO
Battery compartment cover	Optional	VLBACO
IP65 clear case and hinge, 9.8x9.8x4" (25x25x10cm)	Optional	VLWPCASE
Silencer remote kit, 16.4 feet (5m)	Optional	VLSK
Extension cable for temperature sensor, 10 feet (3m)	Optional	CABLE10H
Extension cable for temperature sensor, 33 feet (10m)	Optional	CABLE33H
RS-232 serial data cable, 6 feet (1.8m)	Optional	RSCABLE
Vehicle power reducer from 24V DC to 12V DC	Optional	VPR
Automatic telephone dialer	Optional 115V Optional 230V	 ADTA ADTA220
Remote Alarm	Optional	RA25
DC power Cord (for vehicle Operation)	Optional	CRCPW

APPENDIX D MENU STRUCTURE

Legend:

Adj	Adjust	PrOn/PrOF	Printer On/Off
PASS	Password	PCOn/PCOF	PC port On/Off
ALr	Alarm	SCAL	Standards Scale
AlS	Alarm Range Settings	C/F d9	Celsius/Fahrenheit degrees
LoA1	Low Alarm Threshold	EudA/EndA	Europe (d/m/y) / English (m/d/y)
HiA1	High Alarm Threshold	CloC	Clock Set
Ald1	Alarm Delay	SdAy	Set Date
AlO	Alarm Output	Shr	Set Time
EoFP	End Of Paper	ChPA	Change Password
bu On/OF	Buzzer On/Off	SidN	Set ID Number Code
Co On/OF	Contact On/Off	CALb	Temperature Calibration
Prn	Print	Lo9r	Logging Reset
9rAP/LChr/SChr	Graphics/ Large/ Small Font	SAPr	Sampling Rate

ID Number Code Set

Chr.	Code	Chr.	Code	Chr.	Code
0	0	C	13	P	26
1	1	D	14	Q	27
2	2	E	15	R	28
3	3	F	16	S	29
4	4	G	17	T	30
5	5	H	18	U	31
6	6	I	19	V	32
7	7	J	20	W	33
8	8	K	21	X	34
9	9	L	22	Y	35
	10	M	23	Z	36
A	11	N	24	-	37
B	12	O	25		